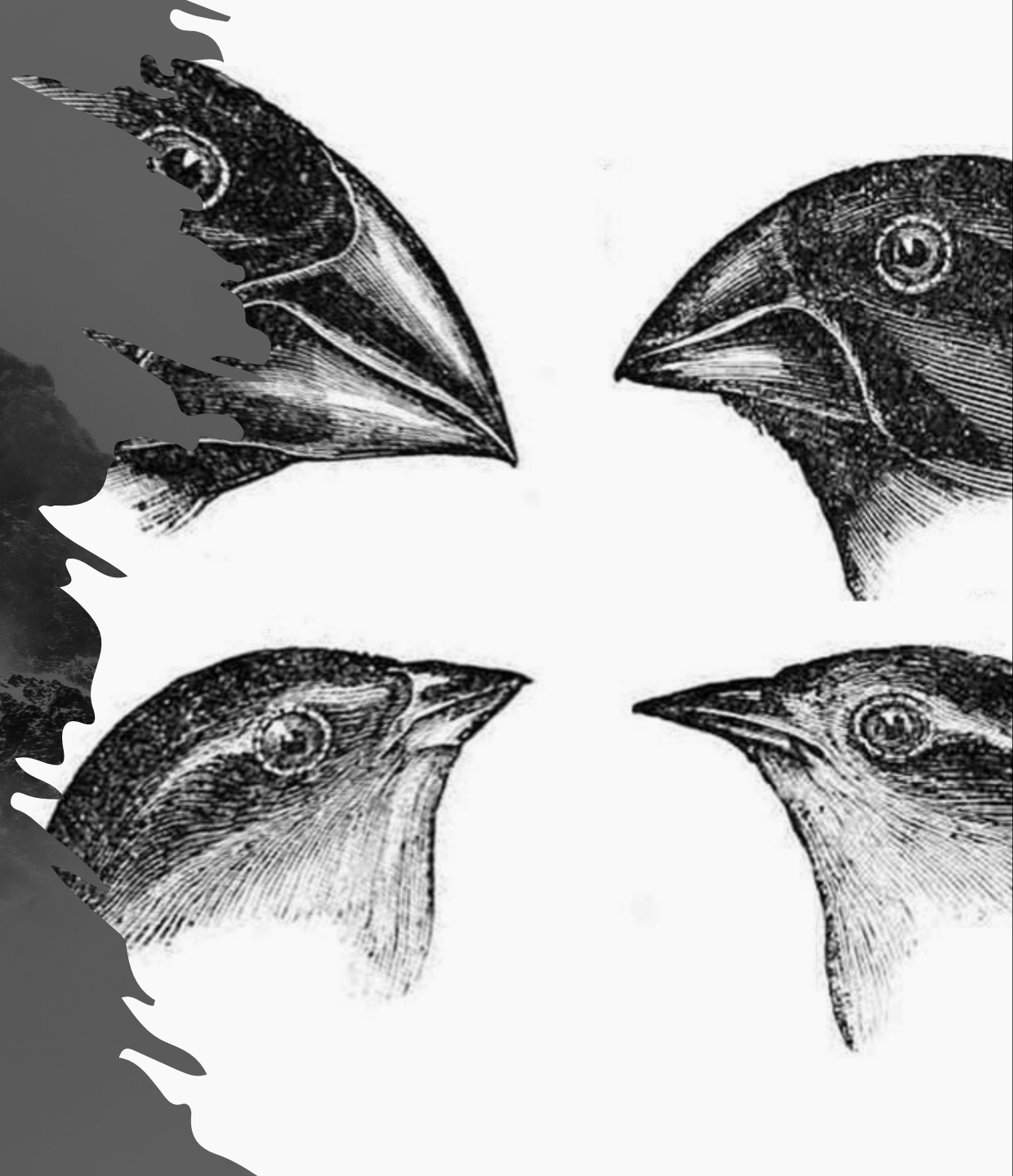


Adaptations

STANDARDS: 3.1G, 3.1H, 3.1L

OBJECTIVE: I CAN DESCRIBE HOW ADAPTATIONS HELP ORGANISMS SURVIVE IN THEIR ENVIRONMENT.

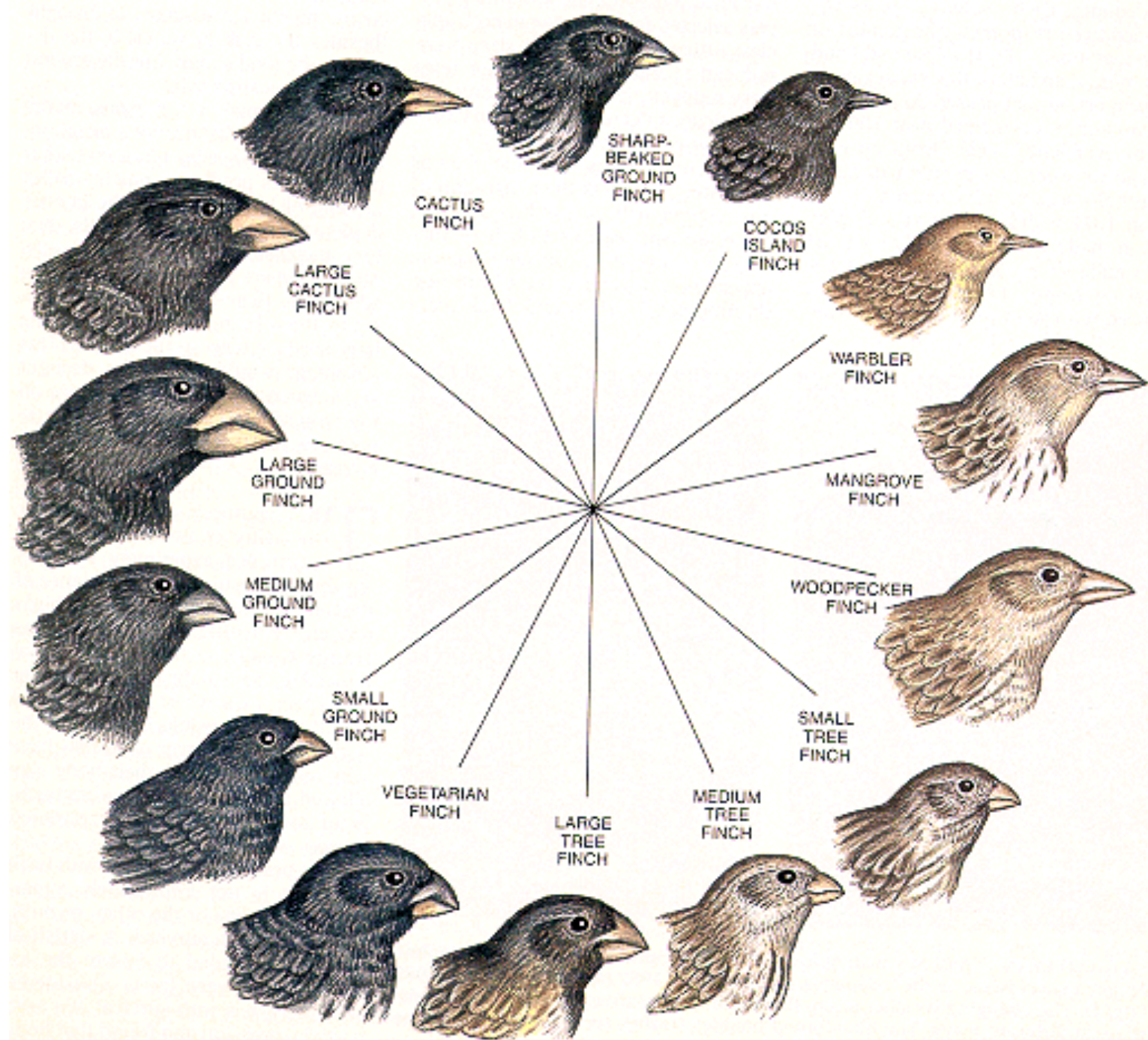


Motivation

The organisms on the right have all evolved from the same ancestor, yet all have different beaks...

Make a prediction to why these finches evolved different beaks.

Hint: Think of natural selection from last lesson



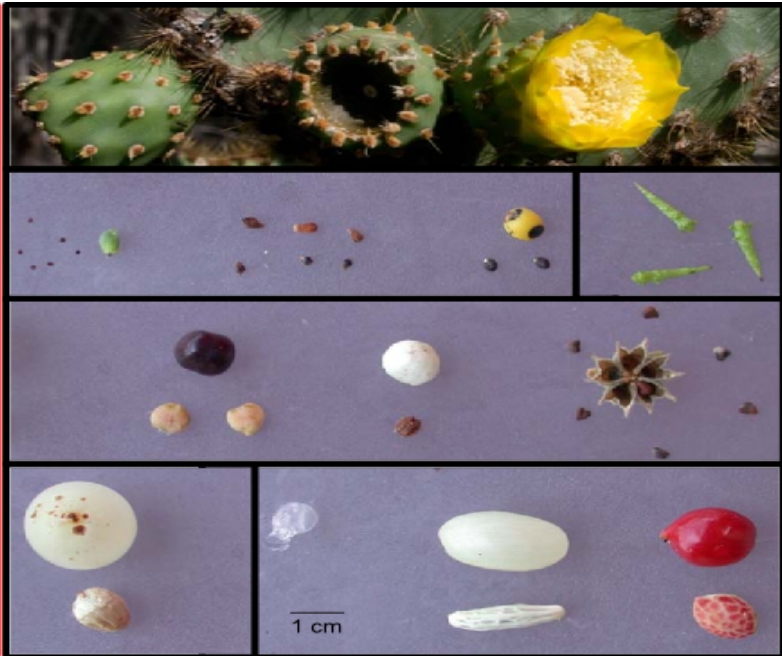
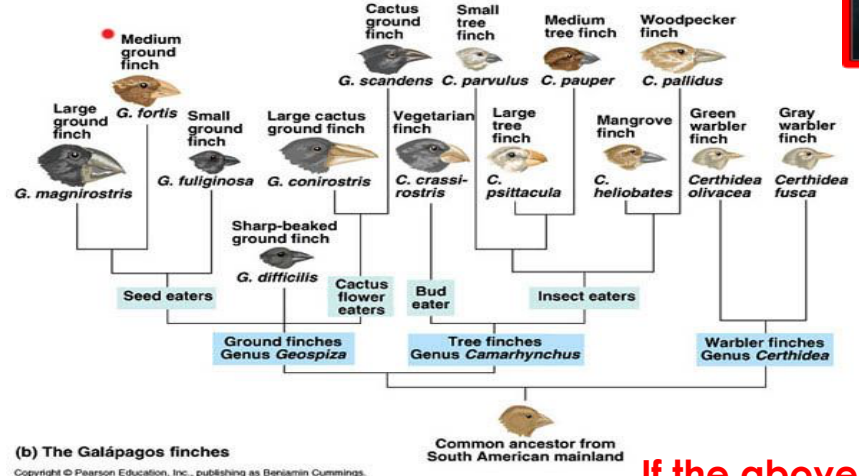
Adaptation: A trait that has evolved to help an organism survive in their environment.

Mini Lesson



Common ancestor from South American mainland

This ancestral finch (pictured above) once traveled to all the Galapagos islands and lived in each island. Over time, due to differences in food availability, the ancestral finch evolved many times to have different beaks that specialized for different types of foods.



Notice how the beaks match the types of food the species eat. Big beaks specialized in eating bigger foods, small beaks specialized in smaller foods. These adaptations allowed each species to eat and limited competition between species.

What process led to the evolution of each species?

If the above species all eat different size foods, will they compete for food?

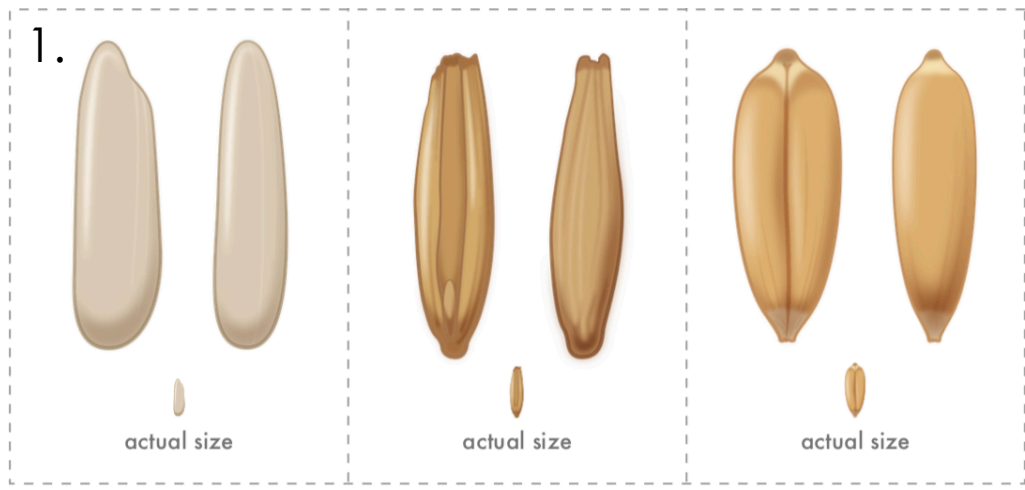
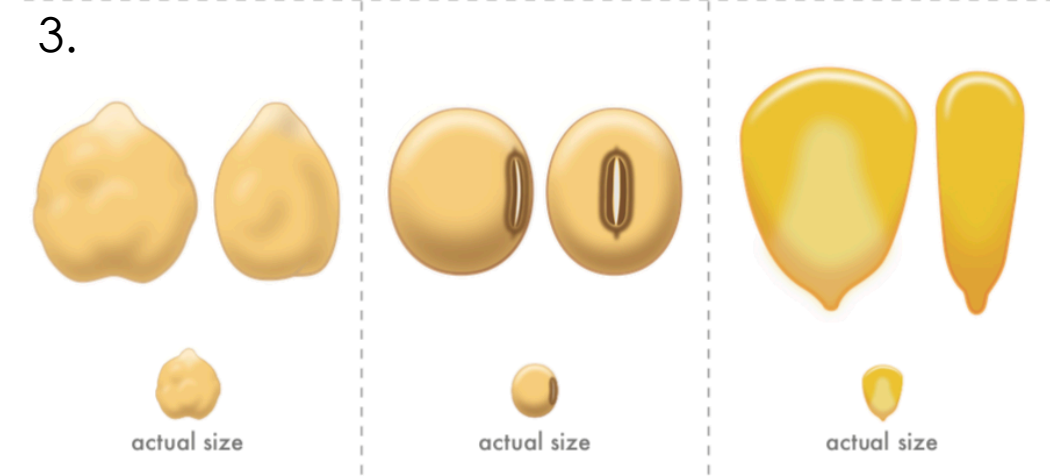
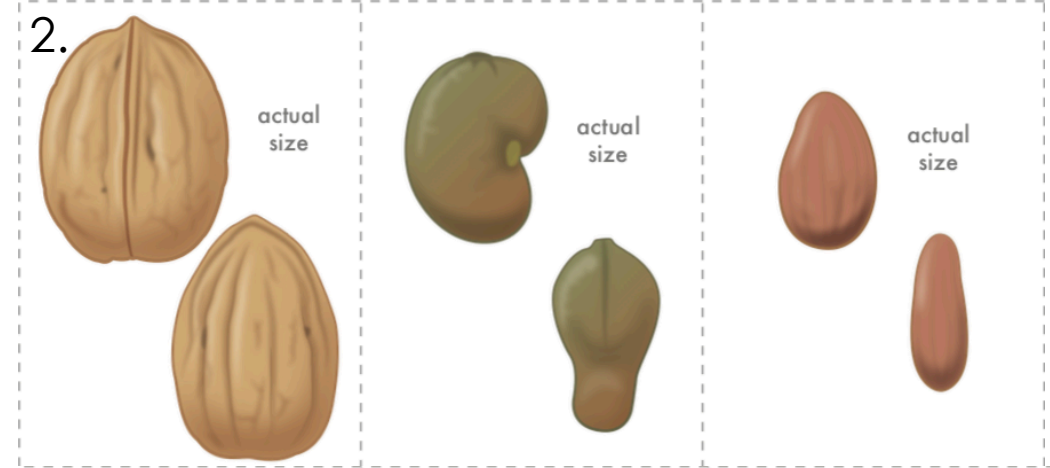
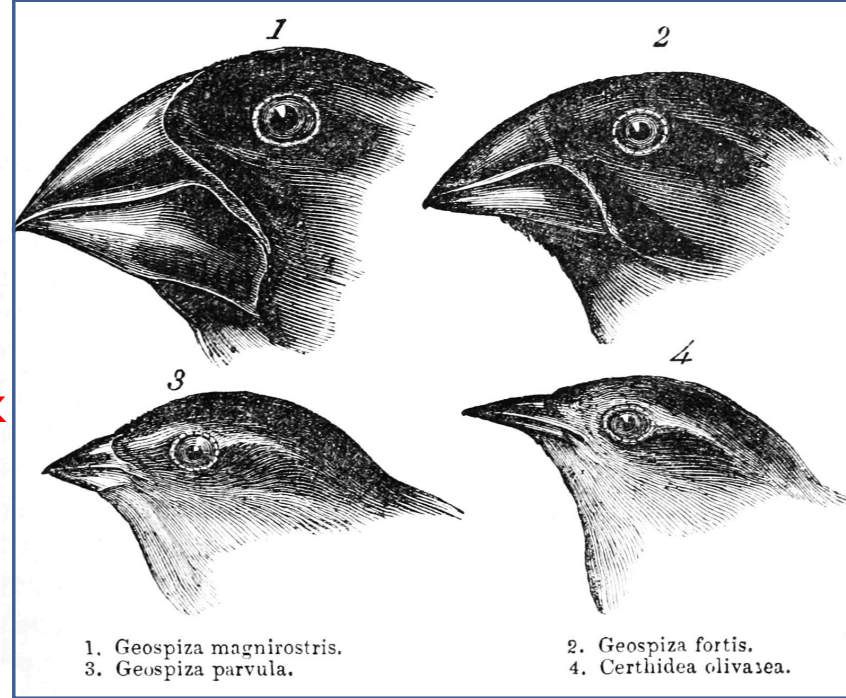
Mini Lesson

Try it!

Which Beaks do you think are best adapted to eat each group of seeds? (match number above beak with the number pertaining to the group of seeds you think they eat.)

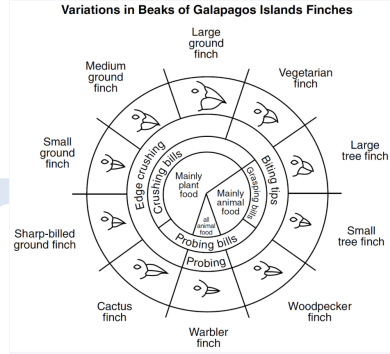
Post your responses to the discussion board. Make sure to reply to at least one classmate.

Explain!



Hint: Check the "Actual Size"

Mini Lesson: Reading the Chart



Notes

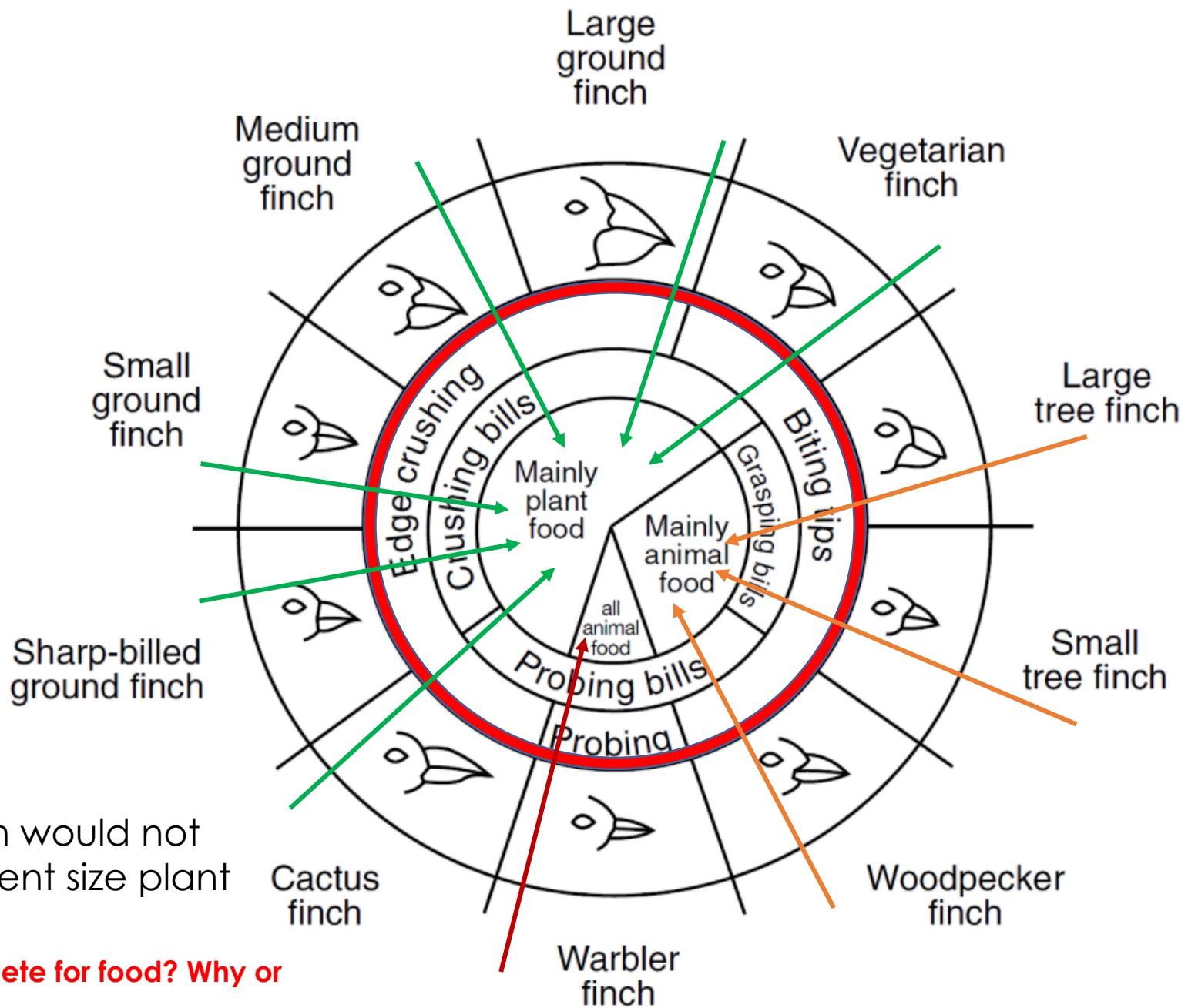
- Each species of finch is listed above its picture
- Follow the arrows to inside the red circle to see what type of food it eats
- **Green Arrow** = Mainly Plant
- **Orange Arrow** = Mainly Animal
- **Red Arrow** = All Animal
- Although many species all eat animal food, or all eat plant food, they each eat a different **SIZE** food, therefore, each species rarely compete with each other for **FOOD**

Example:

Large ground finch and Small ground finch would not compete for food because they eat different size plant food.

Would the Small Tree Finch and Large Tree finch compete for food? Why or why not?

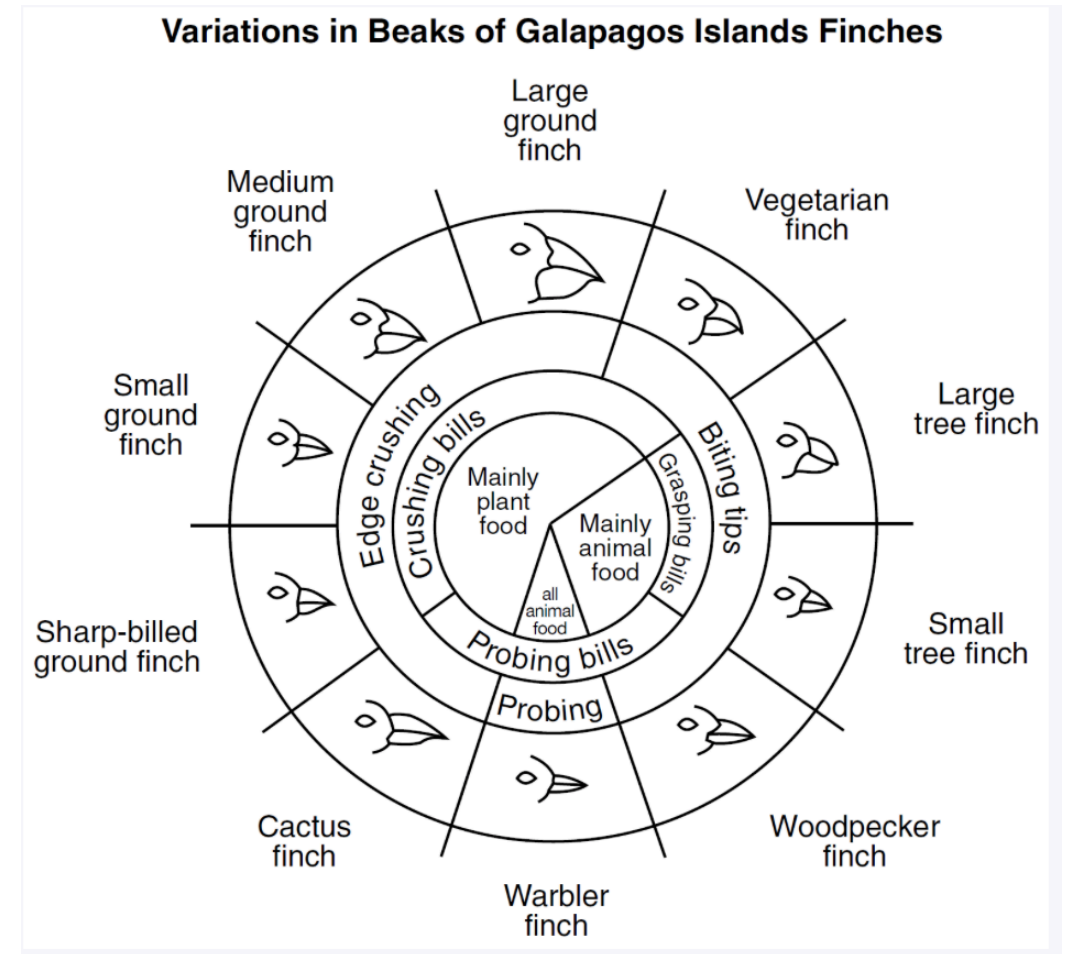
Variations in Beaks of Galapagos Islands Finches



Must Know Regents Facts!

Mini Lesson

1. Adaptations are specific to the environment! For example, gills are an adaptation that allows fish to breathe in underwater environments.
2. Natural Selection is the process that drives the evolution of species with certain adaptations that enable them to survive in their environment.
3. A finch with a beak adapted to eat meat (Warbler Finch) and a finch adapted to eat seeds (Small Ground Finch) will not compete! They eat different type of food!
4. Even if two finches both eat seeds (Medium ground finch and large ground finch), they may not compete for food because different species are adapted to have beaks specialized for different **SIZE** seeds!
5. Even if two finches don't compete for food, they may compete for water, shelter, or mates.
6. Finches may have other adaptations that help them survive like good eyesight, hearing, etc.



Practice

1. Male turkeys are birds that naturally strut and display their large tail feathers, which attracts female turkeys. This display is an example of

- A) a behavioral adaptation
- B) selective breeding
- C) asexual reproduction
- D) a learned behavior

2.

The crucian carp, a Scandinavian fish, thrives in shallow ponds that freeze over during winter. While other creatures in the pond die from lack of oxygen, these carp are able to obtain energy through a biochemical pathway that does not require oxygen. This characteristic is an example of a

- A) feedback mechanism common to carnivores that inhabit shallow pond ecosystems
- B) favorable adaptive trait that has led to increased survival
- C) stage of succession that leads to a new community
- D) gene mutation that occurred because carp need survive to maintain ecological stability



4. The back of the Namib Desert darkling beetle, shown in the photograph below, is covered in little bumps that collect water from the air. When it tilts forward, the water runs off its back into its mouth.



Source: <http://myinformatics.com>

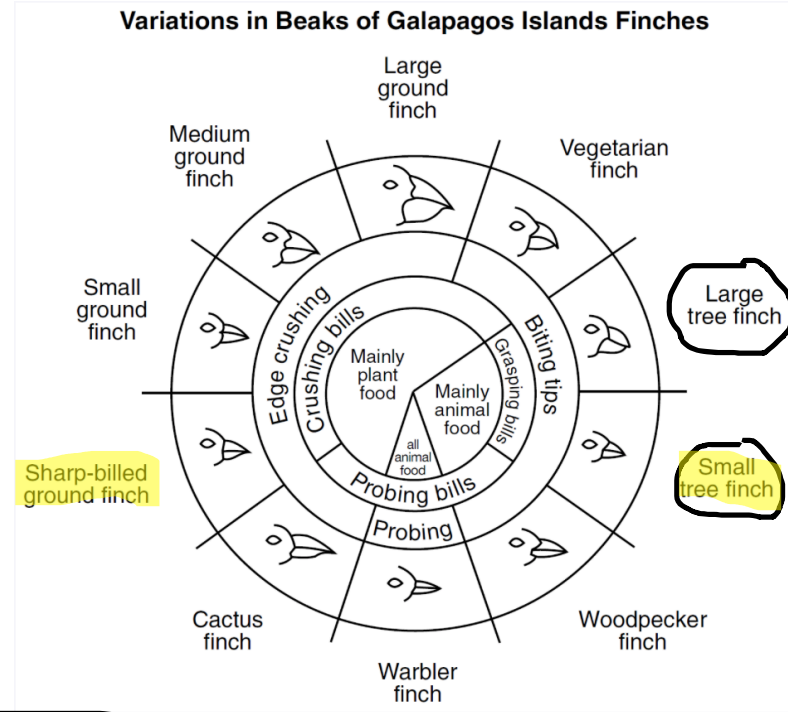
These specialized structures on the beetle's back allow it to

3. One possible reason why polar bears might not be able to survive if the environment they live in changes is because

- A) the species will experience decreased competition for mates
- B) the new environment will cause greater variation in the species
- C) there will be a larger variety of food sources available
- D) they are adapted to the specific environment in which they now live

- A) locate food within the harsh desert environment
- B) obtain a substance that is required for survival
- C) reproduce asexually if mates are not available in the area
- D) increase the chances of survival by producing organic raw materials

Practice



1. A **small tree finch** and a **large tree finch** inhabit the same island. Describe a situation that would allow both populations to live on the same island even though they both feed on animal food.

2. Explain *one* way that **sharp-billed ground finches** and **small tree finches** could possibly compete with each other if they lived on the same island.

Closure

What adaptations do you think humans may have?

Write your answer in you guided notes and post on the discussion boards. Reply to one classmate!



Exit Assessment



Please complete the CastleLearning Exit Assessment or refer to the attached PDF of the questions.

Supplemental Resources:

Adaptations:

<https://www.youtube.com/watch?v=vnmPdHmRv9o>

Darwins Beaks of Finches:

<https://www.youtube.com/watch?v=s64Y8sVYfFY>